

# SEQUENCE LISTING

<110> Boehringer Ingelheim (Canada) Ltd.

<120> Purified Active HCV NS2/3 Protease

<130> 13/082

<150> 60/256,031

<151> 2000-12-15

<160> 21

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1230

<212> DNA

<213> HCV

<220>

<221> CDS

<222> (1)...(1230)

<400> 1

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Met Asp Arg Glu Met Ala Ala Ser Cys Gly Gly Ala Val Phe Ile Gly	
1 5 10 15	
ctt gca ctc ttg acc ttg tca cca tac tat aaa gtg ctc ctc gct agg	96
Leu Ala Leu Leu Thr Leu Ser Pro Tyr Tyr Lys Val Leu Leu Ala Arg	
20 25 30	
ctc ata tgg tgg tta cag tat tta atc acc aga gtc gag gcg cac ttg	144
Leu Ile Trp Trp Leu Gln Tyr Leu Ile Thr Arg Val Glu Ala His Leu	
35 40 45	
caa gtg tgg atc ccc cct ctc aat gtt cgg gga ggc cgc gat gcc atc	192
Gln Val Trp Ile Pro Pro Leu Asn Val Arg Gly Gly Arg Asp Ala Ile	
50 55 60	
atc ctc ctc acg tgc gca gtc cac cca gag cta atc ttt gac atc acc	240
Ile Leu Leu Thr Cys Ala Val His Pro Glu Leu Ile Phe Asp Ile Thr	
65 70 75 80	
aaa ctc ctg ctc gcc ata ttc ggt ccg ctc atg gtg ctc cag gca ggc	288
Lys Leu Leu Leu Ala Ile Phe Gly Pro Leu Met Val Leu Gln Ala Gly	
85 90 95	
ata acc aaa gtg ccg tac ttc gtg cgt gcg cag ggg ctc att cgt gcg	336
Ile Thr Lys Val Pro Tyr Phe Val Arg Ala Gln Gly Leu Ile Arg Ala	
100 105 110	
tgt atg ttg gtg cgg aag gct gcg ggg ggt cat tat gtc caa atg gcc	384
Cys Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val Gln Met Ala	
115 120 125	

ttc atg aag cta gct gcg ctg aca ggt acg tac gtt tat gac cat ctc	432
Phe Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp His Leu	
130 135 140	
act cca ttg cag gat tgg gcc cac gcg ggc cta cga gac ctt gca gtg	480
Thr Pro Leu Gln Asp Trp Ala His Ala Gly Leu Arg Asp Leu Ala Val	
145 150 155 160	
gcg gta gag ccc gtc atc ttc tct gac atg gag gtc aag atc atc acc	528
Ala Val Glu Pro Val Ile Phe Ser Asp Met Glu Val Lys Ile Ile Thr	
165 170 175	
tgg ggg gcg gac acc gcg gca tgc ggg gac atc att tca ggt ctg ccc	576
Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Ser Gly Leu Pro	
180 185 190	
gtc tcc gct cga agg gga agg gag ata ctc ctg gga ccg gcc gat aat	624
Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala Asp Asn	
195 200 205	
ttt gaa ggg cag ggg tgg cga ctc ctt gcg ccc atc acg gcc tac tcc	672
Phe Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr Ser	
210 215 220	
caa cag aca cgg ggc cta ctt ggt tgc atc atc acc agc ctc aca ggc	720
Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly	
225 230 235 240	
cgg gac aag aac cag gtc gag ggg gag gtt caa gtg gtc tcc acc gct	768
Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Val Val Ser Thr Ala	
245 250 255	
aca caa tct ttc ctg gcg acc tgc gtc aac ggc gtg tgt tgg act gtc	816
Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr Val	
260 265 270	
ttc cat ggc gcc ggc tca aag acc ttg gcc ggc ccc aaa ggc cca atc	864
Phe His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro Ile	
275 280 285	
acc cag atg tac act aat gtg gac cag gac ctc gtc ggc tgg cag gcg	912
Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Gln Ala	
290 295 300	
ccc cct ggg gcg cgc tcc atg aca cca tgc acc tgc ggc agc tcg gac	960
Pro Pro Gly Ala Arg Ser Met Thr Pro Cys Thr Cys Gly Ser Ser Asp	
305 310 315 320	
ctc tat ttg gtc acg aga cat gcc gac gtc att ccg gtg cgc cgg cgg	1008
Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg Arg Arg	
325 330 335	
ggc gac agt agg ggg agc ctg ctc tcc ccc agg cct gtc tcc tac ttg	1056
Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser Tyr Leu	
340 345 350	

aag ggc tct tcg ggt ggc cca ctg ctc tgc cct tcg ggg cac gct gtg 1104  
 Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala Val  
           355                                  360                                  365

ggc atc ttc cgg gct gct gtg tgc acc cgg ggg gtt gca aaa gcg gtg 1152  
 Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val  
           370                                  375                                  380

gac ttc ata cct gtt gag tct atg gaa act acc atg cgg act agt agc 1200  
 Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg Thr Ser Ser  
           385                                  390                                  395                                  400

gct tgg cgt cac ccg cag ttc ggt ggt taa 1230  
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                                   405

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 <213> HCV

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                                   20                                  25                                  30  
 Leu Ile Trp Trp Leu Gln Tyr Leu Ile Thr Arg Val Glu Ala His Leu  
                                   35                                  40                                  45  
 Gln Val Trp Ile Pro Pro Leu Asn Val Arg Gly Gly Arg Asp Ala Ile  
                                   50                                  55                                  60  
 Ile Leu Leu Thr Cys Ala Val His Pro Glu Leu Ile Phe Asp Ile Thr  
   65                                  70                                  75                                  80  
 Lys Leu Leu Leu Ala Ile Phe Gly Pro Leu Met Val Leu Gln Ala Gly  
                                   85                                  90                                  95  
 Ile Thr Lys Val Pro Tyr Phe Val Arg Ala Gln Gly Leu Ile Arg Ala  
                                   100                                  105                                  110  
 Cys Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val Gln Met Ala  
                                   115                                  120                                  125  
 Phe Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp His Leu  
                                   130                                  135                                  140  
 Thr Pro Leu Gln Asp Trp Ala His Ala Gly Leu Arg Asp Leu Ala Val  
   145                                  150                                  155                                  160  
 Ala Val Glu Pro Val Ile Phe Ser Asp Met Glu Val Lys Ile Ile Thr  
                                   165                                  170                                  175  
 Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Ser Gly Leu Pro  
                                   180                                  185                                  190  
 Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala Asp Asn  
                                   195                                  200                                  205  
 Phe Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr Ser  
                                   210                                  215                                  220  
 Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly  
   225                                  230                                  235                                  240  
 Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Val Val Ser Thr Ala  
                                   245                                  250                                  255  
 Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr Val  
                                   260                                  265                                  270

Phe His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro Ile  
           275                                  280                  285  
 Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Gln Ala  
           290                                  295                  300  
 Pro Pro Gly Ala Arg Ser Met Thr Pro Cys Thr Cys Gly Ser Ser Asp  
 305                                  310                  315                  320  
 Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg Arg Arg  
                                   325                  330                  335  
 Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser Tyr Leu  
                                   340                  345                  350  
 Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala Val  
                                   355                  360                  365  
 Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val  
           370                                  375                  380  
 Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg Thr Ser Ser  
 385                                  390                  395                  400  
 Ala Trp Arg His Pro Gln Phe Gly Gly  
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<210> 3  
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 <212> DNA  
 <213> HCV

<220>  
 <221> CDS  
 <222> (1)...(1005)

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 ggc ata acc aaa gtg ccg tac ttc gtg cgt gcg cag ggg ctc att cgt 96  
 Gly Ile Thr Lys Val Pro Tyr Phe Val Arg Ala Gln Gly Leu Ile Arg  
                                   20                                  25                                  30  
  
 gcg tgt atg ttg gtg cgg aag gct gcg ggg ggt cat tat gtc caa atg 144  
 Ala Cys Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val Gln Met  
                                   35                                  40                                  45  
  
 gcc ttc atg aag cta gct gcg ctg aca ggt acg tac gtt tat gac cat 192  
 Ala Phe Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp His  
                                   50                                  55                                  60  
  
 ctc act cca ttg cag gat tgg gcc cac gcg ggc cta cga gac ctt gca 240  
 Leu Thr Pro Leu Gln Asp Trp Ala His Ala Gly Leu Arg Asp Leu Ala  
   65                                  70                                  75                                  80  
  
 gtg gcg gta gag ccc gtc atc ttc tct gac atg gag gtc aag atc atc 288  
 Val Ala Val Glu Pro Val Ile Phe Ser Asp Met Glu Val Lys Ile Ile  
                                   85                                  90                                  95  
  
 acc tgg ggg gcg gac acc gcg gca tgc ggg gac atc att tca ggt ctg 336  
 Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Ser Gly Leu  
                                   100                                  105                                  110

ccc gtc tcc gct cga agg gga agg gag ata ctc ctg gga ccg gcc gat	384
Pro Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala Asp	
115 120 125	
aat ttt gaa ggg cag ggg tgg cga ctc ctt gcg ccc atc acg gcc tac	432
Asn Phe Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr	
130 135 140	
tcc caa cag aca cgg ggc cta ctt ggt tgc atc atc acc agc ctc aca	480
Ser Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr	
145 150 155 160	
ggc cgg gac aag aac cag gtc gag ggg gag gtt caa gtg gtc tcc acc	528
Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Val Val Ser Thr	
165 170 175	
gct aca caa tct ttc ctg gcg acc tgc gtc aac ggc gtg tgt tgg act	576
Ala Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr	
180 185 190	
gtc ttc cat ggc gcc ggc tca aag acc ttg gcc ggc ccc aaa ggc cca	624
Val Phe His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro	
195 200 205	
atc acc cag atg tac act aat gtg gac cag gac ctc gtc ggc tgg cag	672
Ile Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Gln	
210 215 220	
gcg ccc cct ggg gcg cgc tcc atg aca cca tgc acc tgc ggc agc tcg	720
Ala Pro Pro Gly Ala Arg Ser Met Thr Pro Cys Thr Cys Gly Ser Ser	
225 230 235 240	
gac ctc tat ttg gtc acg aga cat gcc gac gtc att ccg gtg cgc cgg	768
Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg Arg	
245 250 255	
cgg ggc gac agt agg ggg agc ctg ctc tcc ccc agg cct gtc tcc tac	816
Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser Tyr	
260 265 270	
ttg aag ggc tct tcg ggt ggc cca ctg ctc tgc cct tcg ggg cac gct	864
Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala	
275 280 285	
gtg ggc atc ttc cgg gct gct gtg tgc acc cgg ggg gtt gca aaa gcg	912
Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala	
290 295 300	
gtg gac ttc ata cct gtt gag tct atg gaa act acc atg cgg act agt	960
Val Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg Thr Ser	
305 310 315 320	
agc gct tgg cgt cac ccg cag ttc ggt ggt aaa aag aaa aag taa	1005
Ser Ala Trp Arg His Pro Gln Phe Gly Gly Lys Lys Lys Lys *	
325 330	
ggatcc	1011

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 <212> PRT  
 <213> HCV

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 Ala Cys Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val Gln Met  
 35 40 45  
 Ala Phe Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp His  
 50 55 60  
 Leu Thr Pro Leu Gln Asp Trp Ala His Ala Gly Leu Arg Asp Leu Ala  
 65 70 75 80  
 Val Ala Val Glu Pro Val Ile Phe Ser Asp Met Glu Val Lys Ile Ile  
 85 90 95  
 Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Ser Gly Leu  
 100 105 110  
 Pro Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala Asp  
 115 120 125  
 Asn Phe Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr  
 130 135 140  
 Ser Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr  
 145 150 155 160  
 Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Val Val Ser Thr  
 165 170 175  
 Ala Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr  
 180 185 190  
 Val Phe His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro  
 195 200 205  
 Ile Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Gln  
 210 215 220  
 Ala Pro Pro Gly Ala Arg Ser Met Thr Pro Cys Thr Cys Gly Ser Ser  
 225 230 235 240  
 Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg Arg  
 245 250 255  
 Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser Tyr  
 260 265 270  
 Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala  
 275 280 285  
 Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala  
 290 295 300  
 Val Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg Thr Ser  
 305 310 315 320  
 Ser Ala Trp Arg His Pro Gln Phe Gly Gly Lys Lys Lys Lys  
 325 330

<210> 5  
 <211> 20  
 <212> DNA  
 <213> HCV

<400> 5  
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20

<210> 6  
 <211> 63  
 <212> DNA  
 <213> HCV

<400> 6  
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 cat 63

<210> 7  
 <211> 46  
 <212> DNA  
 <213> HCV

<400> 7  
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<210> 8  
 <211> 45  
 <212> DNA  
 <213> HCV

<400> 8  
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<210> 9  
 <211> 45  
 <212> DNA  
 <213> HCV

<400> 9  
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<210> 10  
 <211> 303  
 <212> PRT  
 <213> HCV

<400> 10  
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 Met Ala Phe Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp  
 35 40 45  
 His Leu Thr Pro Leu Gln Asp Trp Ala His Ala Gly Leu Arg Asp Leu  
 50 55 60  
 Ala Val Ala Val Glu Pro Val Ile Phe Ser Asp Met Glu Val Lys Ile  
 65 70 75 80  
 Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Ser Gly  
 85 90 95  
 Leu Pro Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala  
 100 105 110  
 Asp Asn Phe Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala  
 115 120 125  
 Tyr Ser Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu  
 130 135 140

Thr	Gly	Arg	Asp	Lys	Asn	Gln	Val	Glu	Gly	Glu	Val	Gln	Val	Val	Ser
145					150					155					160
Thr	Ala	Thr	Gln	Ser	Phe	Leu	Ala	Thr	Cys	Val	Asn	Gly	Val	Cys	Trp
				165					170						175
Thr	Val	Phe	His	Gly	Ala	Gly	Ser	Lys	Thr	Leu	Ala	Gly	Pro	Lys	Gly
			180					185					190		
Pro	Ile	Thr	Gln	Met	Tyr	Thr	Asn	Val	Asp	Gln	Asp	Leu	Val	Gly	Trp
		195					200					205			
Gln	Ala	Pro	Pro	Gly	Ala	Arg	Ser	Met	Thr	Pro	Cys	Thr	Cys	Gly	Ser
	210					215					220				
Ser	Asp	Leu	Tyr	Leu	Val	Thr	Arg	His	Ala	Asp	Val	Ile	Pro	Val	Arg
225					230					235					240
Arg	Arg	Gly	Asp	Ser	Arg	Gly	Ser	Leu	Leu	Ser	Pro	Arg	Pro	Val	Ser
				245				250						255	
Tyr	Leu	Lys	Gly	Ser	Ser	Gly	Gly	Pro	Leu	Leu	Cys	Pro	Ser	Gly	His
			260				265						270		
Ala	Val	Gly	Ile	Phe	Arg	Ala	Ala	Val	Cys	Thr	Arg	Gly	Val	Ala	Lys
		275				280						285			
Ala	Val	Asp	Phe	Ile	Pro	Val	Glu	Ser	Met	Glu	Thr	Thr	Met	Arg	
	290					295					300				

<210> 11  
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 <212> PRT  
 <213> HCV

<400> 11

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Thr	Leu	Ser	Pro	Tyr	Tyr	Lys	Val	Leu	Leu	Ala	Arg	Leu	Ile	Trp	Trp
			20					25					30		
Leu	Gln	Tyr	Leu	Ile	Thr	Arg	Val	Glu	Ala	His	Leu	Gln	Val	Trp	Ile
		35				40						45			
Pro	Pro	Leu	Asn	Val	Arg	Gly	Gly	Arg	Asp	Ala	Ile	Ile	Leu	Leu	Thr
	50					55					60				
Cys	Ala	Val	His	Pro	Glu	Leu	Ile	Phe	Asp	Ile	Thr	Lys	Leu	Leu	Leu
65					70				75						80
Ala	Ile	Phe	Gly	Pro	Leu	Met	Val	Leu	Gln	Ala	Gly	Ile	Thr	Lys	Val
			85					90						95	
Pro	Tyr	Phe	Val	Arg	Ala	Gln	Gly	Leu	Ile	Arg	Ala	Cys	Met	Leu	Val
			100					105					110		
Arg	Lys	Ala	Ala	Gly	Gly	His	Tyr	Val	Gln	Met	Ala	Phe	Met	Lys	Leu
		115				120						125			
Ala	Ala	Leu	Thr	Gly	Thr	Tyr	Val	Tyr	Asp	His	Leu	Thr	Pro	Leu	Gln
		130				135					140				
Asp	Trp	Ala	His	Ala	Gly	Leu	Arg	Asp	Leu	Ala	Val	Ala	Val	Glu	Pro
145					150					155					160
Val	Ile	Phe	Ser	Asp	Met	Glu	Val	Lys	Ile	Ile	Thr	Trp	Gly	Ala	Asp
				165					170					175	
Thr	Ala	Ala	Cys	Gly	Asp	Ile	Ile	Ser	Gly	Leu	Pro	Val	Ser	Ala	Arg
			180					185					190		
Arg	Gly	Arg	Glu	Ile	Leu	Leu	Gly	Pro	Ala	Asp	Asn	Phe	Glu	Gly	Gln
		195					200					205			
Gly	Trp	Arg	Leu	Leu	Ala	Pro	Ile	Thr	Ala	Tyr	Ser	Gln	Gln	Thr	Arg
	210					215					220				
Gly	Leu	Leu	Gly	Cys	Ile	Ile	Thr	Ser	Leu	Thr	Gly	Arg	Asp	Lys	Asn
225					230					235					240



Gln	Val	Glu	Gly	Glu	Val	Gln	Val	Val	Ser	Thr	Ala	Thr	Gln	Ser	Phe
				245					250					255	
Leu	Ala	Thr	Cys	Val	Asn	Gly	Val	Cys	Trp	Thr	Val	Phe	His	Gly	Ala
			260					265						270	
Gly	Ser	Lys	Thr	Leu	Ala	Gly	Pro	Lys	Gly	Pro	Ile	Thr	Gln	Met	Tyr
		275					280						285		
Thr	Asn	Val	Asp	Gln	Asp	Leu	Val	Gly	Trp	Gln	Ala	Pro	Pro	Gly	Ala
	290					295					300				
Arg	Ser	Met	Thr	Pro	Cys	Thr	Cys	Gly	Ser	Ser	Asp	Leu	Tyr	Leu	Val
305					310					315					320
Thr	Arg	His	Ala	Asp	Val	Ile	Pro	Val	Arg	Arg	Arg	Gly	Asp	Ser	Arg
				325					330					335	
Gly	Ser	Leu	Leu	Ser	Pro	Arg	Pro	Val	Ser	Tyr	Leu	Lys	Gly	Ser	Ser
			340					345					350		
Gly	Gly	Pro	Leu	Leu	Cys	Pro	Ser	Gly	His	Ala	Val	Gly	Ile	Phe	Arg
		355					360					365			
Ala	Ala	Val	Cys	Thr	Arg	Gly	Val	Ala	Lys	Ala	Val	Asp	Phe	Ile	Pro
		370				375						380			
Val	Glu	Ser	Met	Glu	Thr	Thr	Met	Arg							
385						390									

<210> 12  
 <211> 380  
 <212> PRT  
 <213> HCV

<400> 12

Ala	Leu	Leu	Thr	Leu	Ser	Pro	Tyr	Tyr	Lys	Val	Leu	Leu	Ala	Arg	Leu
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Ile	Trp	Trp	Leu	Gln	Tyr	Leu	Ile	Thr	Arg	Val	Glu	Ala	His	Leu	Gln
			20					25					30		
Val	Trp	Ile	Pro	Pro	Leu	Asn	Val	Arg	Gly	Gly	Arg	Asp	Ala	Ile	Ile
		35				40						45			
Leu	Leu	Thr	Cys	Ala	Val	His	Pro	Glu	Leu	Ile	Phe	Asp	Ile	Thr	Lys
	50					55					60				
Leu	Leu	Leu	Ala	Ile	Phe	Gly	Pro	Leu	Met	Val	Leu	Gln	Ala	Gly	Ile
65					70					75					80
Thr	Lys	Val	Pro	Tyr	Phe	Val	Arg	Ala	Gln	Gly	Leu	Ile	Arg	Ala	Cys
				85					90					95	
Met	Leu	Val	Arg	Lys	Ala	Ala	Gly	Gly	His	Tyr	Val	Gln	Met	Ala	Phe
			100					105					110		
Met	Lys	Leu	Ala	Ala	Leu	Thr	Gly	Thr	Tyr	Val	Tyr	Asp	His	Leu	Thr
		115					120					125			
Pro	Leu	Gln	Asp	Trp	Ala	His	Ala	Gly	Leu	Arg	Asp	Leu	Ala	Val	Ala
	130					135					140				
Val	Glu	Pro	Val	Ile	Phe	Ser	Asp	Met	Glu	Val	Lys	Ile	Ile	Thr	Trp
145					150					155					160
Gly	Ala	Asp	Thr	Ala	Ala	Cys	Gly	Asp	Ile	Ile	Ser	Gly	Leu	Pro	Val
				165					170					175	
Ser	Ala	Arg	Arg	Gly	Arg	Glu	Ile	Leu	Leu	Gly	Pro	Ala	Asp	Asn	Phe
			180					185					190		
Glu	Gly	Gln	Gly	Trp	Arg	Leu	Leu	Ala	Pro	Ile	Thr	Ala	Tyr	Ser	Gln
		195					200					205			
Gln	Thr	Arg	Gly	Leu	Leu	Gly	Cys	Ile	Ile	Thr	Ser	Leu	Thr	Gly	Arg
	210					215					220				
Asp	Lys	Asn	Gln	Val	Glu	Gly	Glu	Val	Gln	Val	Val	Ser	Thr	Ala	Thr
225					230					235					240

Gln	Ser	Phe	Leu	Ala	Thr	Cys	Val	Asn	Gly	Val	Cys	Trp	Thr	Val	Phe
				245					250					255	
His	Gly	Ala	Gly	Ser	Lys	Thr	Leu	Ala	Gly	Pro	Lys	Gly	Pro	Ile	Thr
			260					265						270	
Gln	Met	Tyr	Thr	Asn	Val	Asp	Gln	Asp	Leu	Val	Gly	Trp	Gln	Ala	Pro
		275					280					285			
Pro	Gly	Ala	Arg	Ser	Met	Thr	Pro	Cys	Thr	Cys	Gly	Ser	Ser	Asp	Leu
	290					295					300				
Tyr	Leu	Val	Thr	Arg	His	Ala	Asp	Val	Ile	Pro	Val	Arg	Arg	Arg	Gly
305					310					315					320
Asp	Ser	Arg	Gly	Ser	Leu	Leu	Ser	Pro	Arg	Pro	Val	Ser	Tyr	Leu	Lys
				325					330					335	
Gly	Ser	Ser	Gly	Gly	Pro	Leu	Leu	Cys	Pro	Ser	Gly	His	Ala	Val	Gly
			340					345					350		
Ile	Phe	Arg	Ala	Ala	Val	Cys	Thr	Arg	Gly	Val	Ala	Lys	Ala	Val	Asp
		355					360					365			
Phe	Ile	Pro	Val	Glu	Ser	Met	Glu	Thr	Thr	Met	Arg				
	370					375					380				

<210> 13  
 <211> 352  
 <212> PRT  
 <213> HCV

<400> 13

Ala	His	Leu	Gln	Val	Trp	Ile	Pro	Pro	Leu	Asn	Val	Arg	Gly	Gly	Arg
1				5					10					15	
Asp	Ala	Ile	Ile	Leu	Leu	Thr	Cys	Ala	Val	His	Pro	Glu	Leu	Ile	Phe
			20					25					30		
Asp	Ile	Thr	Lys	Leu	Leu	Leu	Ala	Ile	Phe	Gly	Pro	Leu	Met	Val	Leu
		35					40					45			
Gln	Ala	Gly	Ile	Thr	Lys	Val	Pro	Tyr	Phe	Val	Arg	Ala	Gln	Gly	Leu
	50					55					60				
Ile	Arg	Ala	Cys	Met	Leu	Val	Arg	Lys	Ala	Ala	Gly	Gly	His	Tyr	Val
65					70					75					80
Gln	Met	Ala	Phe	Met	Lys	Leu	Ala	Ala	Leu	Thr	Gly	Thr	Tyr	Val	Tyr
				85					90				95		
Asp	His	Leu	Thr	Pro	Leu	Gln	Asp	Trp	Ala	His	Ala	Gly	Leu	Arg	Asp
			100					105					110		
Leu	Ala	Val	Ala	Val	Glu	Pro	Val	Ile	Phe	Ser	Asp	Met	Glu	Val	Lys
		115					120					125			
Ile	Ile	Thr	Trp	Gly	Ala	Asp	Thr	Ala	Ala	Cys	Gly	Asp	Ile	Ile	Ser
	130					135					140				
Gly	Leu	Pro	Val	Ser	Ala	Arg	Arg	Gly	Arg	Glu	Ile	Leu	Leu	Gly	Pro
145					150					155					160
Ala	Asp	Asn	Phe	Glu	Gly	Gln	Gly	Trp	Arg	Leu	Leu	Ala	Pro	Ile	Thr
				165				170					175		
Ala	Tyr	Ser	Gln	Gln	Thr	Arg	Gly	Leu	Leu	Gly	Cys	Ile	Ile	Thr	Ser
			180					185					190		
Leu	Thr	Gly	Arg	Asp	Lys	Asn	Gln	Val	Glu	Gly	Glu	Val	Gln	Val	Val
		195					200					205			
Ser	Thr	Ala	Thr	Gln	Ser	Phe	Leu	Ala	Thr	Cys	Val	Asn	Gly	Val	Cys
	210					215						220			
Trp	Thr	Val	Phe	His	Gly	Ala	Gly	Ser	Lys	Thr	Leu	Ala	Gly	Pro	Lys
225					230					235					240
Gly	Pro	Ile	Thr	Gln	Met	Tyr	Thr	Asn	Val	Asp	Gln	Asp	Leu	Val	Gly
				245					250					255	

Trp	Gln	Ala	Pro	Pro	Gly	Ala	Arg	Ser	Met	Thr	Pro	Cys	Thr	Cys	Gly
			260					265					270		
Ser	Ser	Asp	Leu	Tyr	Leu	Val	Thr	Arg	His	Ala	Asp	Val	Ile	Pro	Val
		275						280				285			
Arg	Arg	Arg	Gly	Asp	Ser	Arg	Gly	Ser	Leu	Leu	Ser	Pro	Arg	Pro	Val
		290				295					300				
Ser	Tyr	Leu	Lys	Gly	Ser	Ser	Gly	Gly	Pro	Leu	Leu	Cys	Pro	Ser	Gly
305					310					315					320
His	Ala	Val	Gly	Ile	Phe	Arg	Ala	Ala	Val	Cys	Thr	Arg	Gly	Val	Ala
			325						330					335	
Lys	Ala	Val	Asp	Phe	Ile	Pro	Val	Glu	Ser	Met	Glu	Thr	Thr	Met	Arg
			340					345					350		

<210> 14  
 <211> 341  
 <212> PRT  
 <213> HCV

<400> 14

Val	Arg	Gly	Gly	Arg	Asp	Ala	Ile	Ile	Leu	Leu	Thr	Cys	Ala	Val	His
1				5					10					15	
Pro	Glu	Leu	Ile	Phe	Asp	Ile	Thr	Lys	Leu	Leu	Leu	Ala	Ile	Phe	Gly
			20					25					30		
Pro	Leu	Met	Val	Leu	Gln	Ala	Gly	Ile	Thr	Lys	Val	Pro	Tyr	Phe	Val
		35					40					45			
Arg	Ala	Gln	Gly	Leu	Ile	Arg	Ala	Cys	Met	Leu	Val	Arg	Lys	Ala	Ala
	50					55					60				
Gly	Gly	His	Tyr	Val	Gln	Met	Ala	Phe	Met	Lys	Leu	Ala	Ala	Leu	Thr
65					70					75					80
Gly	Thr	Tyr	Val	Tyr	Asp	His	Leu	Thr	Pro	Leu	Gln	Asp	Trp	Ala	His
				85					90					95	
Ala	Gly	Leu	Arg	Asp	Leu	Ala	Val	Ala	Val	Glu	Pro	Val	Ile	Phe	Ser
			100					105					110		
Asp	Met	Glu	Val	Lys	Ile	Ile	Thr	Trp	Gly	Ala	Asp	Thr	Ala	Ala	Cys
		115					120					125			
Gly	Asp	Ile	Ile	Ser	Gly	Leu	Pro	Val	Ser	Ala	Arg	Arg	Gly	Arg	Glu
	130				135						140				
Ile	Leu	Leu	Gly	Pro	Ala	Asp	Asn	Phe	Glu	Gly	Gln	Gly	Trp	Arg	Leu
145					150					155					160
Leu	Ala	Pro	Ile	Thr	Ala	Tyr	Ser	Gln	Gln	Thr	Arg	Gly	Leu	Leu	Gly
				165					170					175	
Cys	Ile	Ile	Thr	Ser	Leu	Thr	Gly	Arg	Asp	Lys	Asn	Gln	Val	Glu	Gly
			180					185					190		
Glu	Val	Gln	Val	Val	Ser	Thr	Ala	Thr	Gln	Ser	Phe	Leu	Ala	Thr	Cys
		195					200					205			
Val	Asn	Gly	Val	Cys	Trp	Thr	Val	Phe	His	Gly	Ala	Gly	Ser	Lys	Thr
	210					215					220				
Leu	Ala	Gly	Pro	Lys	Gly	Pro	Ile	Thr	Gln	Met	Tyr	Thr	Asn	Val	Asp
225					230					235					240
Gln	Asp	Leu	Val	Gly	Trp	Gln	Ala	Pro	Pro	Gly	Ala	Arg	Ser	Met	Thr
				245					250					255	
Pro	Cys	Thr	Cys	Gly	Ser	Ser	Asp	Leu	Tyr	Leu	Val	Thr	Arg	His	Ala
			260					265					270		
Asp	Val	Ile	Pro	Val	Arg	Arg	Arg	Gly	Asp	Ser	Arg	Gly	Ser	Leu	Leu
		275					280					285			
Ser	Pro	Arg	Pro	Val	Ser	Tyr	Leu	Lys	Gly	Ser	Ser	Gly	Gly	Pro	Leu
	290					295					300				

Leu Cys Pro Ser Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys  
 305 310 315 320  
 Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Met  
 325 330 335  
 Glu Thr Thr Met Arg  
 340

<210> 15  
 <211> 292  
 <212> PRT  
 <213> HCV

<400> 15  
 Ala Gln Gly Leu Ile Arg Ala Cys Met Leu Val Arg Lys Ala Ala Gly  
 1 5 10 15  
 Gly His Tyr Val Gln Met Ala Phe Met Lys Leu Ala Ala Leu Thr Gly  
 20 25 30  
 Thr Tyr Val Tyr Asp His Leu Thr Pro Leu Gln Asp Trp Ala His Ala  
 35 40 45  
 Gly Leu Arg Asp Leu Ala Val Ala Val Glu Pro Val Ile Phe Ser Asp  
 50 55 60  
 Met Glu Val Lys Ile Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly  
 65 70 75 80  
 Asp Ile Ile Ser Gly Leu Pro Val Ser Ala Arg Arg Gly Arg Glu Ile  
 85 90 95  
 Leu Leu Gly Pro Ala Asp Asn Phe Glu Gly Gln Gly Trp Arg Leu Leu  
 100 105 110  
 Ala Pro Ile Thr Ala Tyr Ser Gln Gln Thr Arg Gly Leu Leu Gly Cys  
 115 120 125  
 Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu  
 130 135 140  
 Val Gln Val Val Ser Thr Ala Thr Gln Ser Phe Leu Ala Thr Cys Val  
 145 150 155 160  
 Asn Gly Val Cys Trp Thr Val Phe His Gly Ala Gly Ser Lys Thr Leu  
 165 170 175  
 Ala Gly Pro Lys Gly Pro Ile Thr Gln Met Tyr Thr Asn Val Asp Gln  
 180 185 190  
 Asp Leu Val Gly Trp Gln Ala Pro Pro Gly Ala Arg Ser Met Thr Pro  
 195 200 205  
 Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp  
 210 215 220  
 Val Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser  
 225 230 235 240  
 Pro Arg Pro Val Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu  
 245 250 255  
 Cys Pro Ser Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr  
 260 265 270  
 Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Met Glu  
 275 280 285  
 Thr Thr Met Arg  
 290

<210> 16  
 <211> 303  
 <212> PRT  
 <213> HCV

<400> 16  
 Ala Gly Ile Thr Lys Val Pro Tyr Phe Val Arg Ala Gln Gly Leu Ile  
 1 5 10 15  
 Arg Ala Cys Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val Gln  
 20 25 30  
 Met Ala Phe Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp  
 35 40 45  
 Ala Leu Thr Pro Leu Gln Asp Trp Ala His Ala Gly Leu Arg Asp Leu  
 50 55 60  
 Ala Val Ala Val Glu Pro Val Ile Phe Ser Asp Met Glu Val Lys Ile  
 65 70 75 80  
 Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Ser Gly  
 85 90 95  
 Leu Pro Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala  
 100 105 110  
 Asp Asn Phe Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala  
 115 120 125  
 Tyr Ser Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu  
 130 135 140  
 Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Val Val Ser  
 145 150 155 160  
 Thr Ala Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp  
 165 170 175  
 Thr Val Phe His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly  
 180 185 190  
 Pro Ile Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp  
 195 200 205  
 Gln Ala Pro Pro Gly Ala Arg Ser Met Thr Pro Cys Thr Cys Gly Ser  
 210 215 220  
 Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg  
 225 230 235 240  
 Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser  
 245 250 255  
 Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His  
 260 265 270  
 Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys  
 275 280 285  
 Ala Val Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg  
 290 295 300

<210> 17  
 <211> 301  
 <212> PRT  
 <213> HCV

<400> 17  
 Ala Gly Ile Thr Lys Val Pro Tyr Phe Val Arg Ala Gln Gly Leu Ile  
 1 5 10 15  
 Arg Ala Cys Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val Gln  
 20 25 30  
 Met Ala Phe Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp  
 35 40 45

His	Leu	Thr	Pro	Leu	Gln	Asp	Trp	Ala	His	Ala	Gly	Leu	Arg	Asp	Leu
50						55					60				
Ala	Val	Ala	Val	Glu	Pro	Val	Ile	Phe	Ser	Asp	Met	Glu	Val	Lys	Ile
65					70					75					80
Ile	Thr	Trp	Gly	Ala	Asp	Thr	Ala	Ala	Cys	Gly	Asp	Ile	Ile	Ser	Gly
			85						90					95	
Leu	Pro	Val	Ser	Ala	Arg	Arg	Gly	Arg	Glu	Ile	Leu	Leu	Gly	Pro	Ala
			100					105					110		
Asp	Asn	Phe	Glu	Gly	Gln	Gly	Trp	Arg	Leu	Pro	Ile	Thr	Ala	Tyr	Ser
		115					120					125			
Gln	Gln	Thr	Arg	Gly	Leu	Leu	Gly	Cys	Ile	Ile	Thr	Ser	Leu	Thr	Gly
		130				135					140				
Arg	Asp	Lys	Asn	Gln	Val	Glu	Gly	Glu	Val	Gln	Val	Val	Ser	Thr	Ala
145					150					155					160
Thr	Gln	Ser	Phe	Leu	Ala	Thr	Cys	Val	Asn	Gly	Val	Cys	Trp	Thr	Val
			165					170						175	
Phe	His	Gly	Ala	Gly	Ser	Lys	Thr	Leu	Ala	Gly	Pro	Lys	Gly	Pro	Ile
			180					185					190		
Thr	Gln	Met	Tyr	Thr	Asn	Val	Asp	Gln	Asp	Leu	Val	Gly	Trp	Gln	Ala
		195					200					205			
Pro	Pro	Gly	Ala	Arg	Ser	Met	Thr	Pro	Cys	Thr	Cys	Gly	Ser	Ser	Asp
		210				215					220				
Leu	Tyr	Leu	Val	Thr	Arg	His	Ala	Asp	Val	Ile	Pro	Val	Arg	Arg	Arg
225					230					235					240
Gly	Asp	Ser	Arg	Gly	Ser	Leu	Leu	Ser	Pro	Arg	Pro	Val	Ser	Tyr	Leu
			245					250						255	
Lys	Gly	Ser	Ser	Gly	Gly	Pro	Leu	Leu	Cys	Pro	Ser	Gly	His	Ala	Val
			260					265					270		
Gly	Ile	Phe	Arg	Ala	Ala	Val	Cys	Thr	Arg	Gly	Val	Ala	Lys	Ala	Val
		275					280					285			
Asp	Phe	Ile	Pro	Val	Glu	Ser	Met	Glu	Thr	Thr	Met	Arg			
		290				295					300				

<210> 18  
 <211> 303  
 <212> PRT  
 <213> HCV

<400> 18															
Ala	Gly	Ile	Thr	Lys	Val	Pro	Tyr	Phe	Val	Arg	Ala	Gln	Gly	Leu	Ile
1				5					10					15	
Arg	Ala	Cys	Met	Leu	Val	Arg	Lys	Ala	Ala	Gly	Gly	His	Tyr	Val	Gln
			20					25					30		
Met	Ala	Phe	Met	Lys	Leu	Ala	Ala	Leu	Thr	Gly	Thr	Tyr	Val	Tyr	Asp
		35					40					45			
His	Leu	Thr	Pro	Leu	Gln	Asp	Trp	Ala	His	Ala	Gly	Leu	Arg	Asp	Leu
	50					55					60				
Ala	Val	Ala	Val	Glu	Pro	Val	Ile	Phe	Ser	Asp	Met	Glu	Val	Lys	Ile
65					70					75					80
Ile	Thr	Trp	Gly	Ala	Asp	Thr	Ala	Ala	Ala	Gly	Asp	Ile	Ile	Ser	Gly
			85					90						95	
Leu	Pro	Val	Ser	Ala	Arg	Arg	Gly	Arg	Glu	Ile	Leu	Leu	Gly	Pro	Ala
			100					105					110		
Asp	Asn	Phe	Glu	Gly	Gln	Gly	Trp	Arg	Leu	Leu	Ala	Pro	Ile	Thr	Ala
		115					120					125			
Tyr	Ser	Gln	Gln	Thr	Arg	Gly	Leu	Leu	Gly	Cys	Ile	Ile	Thr	Ser	Leu
		130				135					140				

Thr	Gly	Arg	Asp	Lys	Asn	Gln	Val	Glu	Gly	Glu	Val	Gln	Val	Val	Ser
145					150					155					160
Thr	Ala	Thr	Gln	Ser	Phe	Leu	Ala	Thr	Cys	Val	Asn	Gly	Val	Cys	Trp
				165					170						175
Thr	Val	Phe	His	Gly	Ala	Gly	Ser	Lys	Thr	Leu	Ala	Gly	Pro	Lys	Gly
			180					185						190	
Pro	Ile	Thr	Gln	Met	Tyr	Thr	Asn	Val	Asp	Gln	Asp	Leu	Val	Gly	Trp
		195					200					205			
Gln	Ala	Pro	Pro	Gly	Ala	Arg	Ser	Met	Thr	Pro	Cys	Thr	Cys	Gly	Ser
	210					215					220				
Ser	Asp	Leu	Tyr	Leu	Val	Thr	Arg	His	Ala	Asp	Val	Ile	Pro	Val	Arg
225					230					235					240
Arg	Arg	Gly	Asp	Ser	Arg	Gly	Ser	Leu	Leu	Ser	Pro	Arg	Pro	Val	Ser
				245				250						255	
Tyr	Leu	Lys	Gly	Ser	Ser	Gly	Gly	Pro	Leu	Leu	Cys	Pro	Ser	Gly	His
			260				265						270		
Ala	Val	Gly	Ile	Phe	Arg	Ala	Ala	Val	Cys	Thr	Arg	Gly	Val	Ala	Lys
		275				280						285			
Ala	Val	Asp	Phe	Ile	Pro	Val	Glu	Ser	Met	Glu	Thr	Thr	Met	Arg	
	290					295					300				

<210> 19  
 <211> 11  
 <212> PRT  
 <213> HCV

<220>  
 <221> VARIANT  
 <222> (1)...(1)  
 <223> Asp labeled with anthranilyl

<221> VARIANT  
 <222> (6)...(6)  
 <223> Xaa at position 6 is Abu

<221> VARIANT  
 <222> (6)...(7)  
 <223> Abu-A between 6 and 7 is C(O)-O  
 <221> VARIANT  
 <222> (9)...(9)  
 <223> Tyr at position 9 is derivatized with 3-NO2

<400> 19  
 Asp Asp Ile Val Pro Xaa Ala Met Tyr Thr Trp  
 1 5 10

<210> 20  
 <211> 6  
 <212> PRT  
 <213> HCV

<220>  
 <221> VARIANT  
 <222> (1)...(1)  
 <223> Asp labeled with anthranilyl

<221> VARIANT  
<222> (6)...(6)  
<223> Xaa at position 6 is Abu

<400> 20  
Asp Asp Ile Val Pro Xaa  
1 5

<210> 21  
<211> 10  
<212> PRT  
<213> HCV

<400> 21  
Ser Phe Glu Gly Gln Gly Trp Arg Leu Leu  
1 5 10